Claims

[c1] 1. In a distributed network including at least one local area network having a network device and a wide area network having an access concentrator, a customer premise access equipment comprising:
a first interface operatively connected to the network device and being adapted to receive at least one data packet from the network device;
a second interface operatively connected to the access concentrator and being adapted to provide at least one data packet to the access concentrator for transmission to the wide area network; and
an auto-connect module operably connected to the first interface and the second interface and being adapted to automatically establish a physical connection between the second interface and the access concentrator based at least in part on reception of a data packet intended for the wide area network by the customer premise access equipment.

[c2] 2. The customer premise access equipment as in Claim 1, further comprising a packet buffer adapted to:
store the data packet intended for the wide area network until the physical connection is established; and
provide the at least one packet to the second interface after the physical connection is established for transmission to the access concentrator over the physical connection.

[c3] 3. The customer premise access equipment as in Claim 1, further comprising a packet filter adapted to:
determine an intended destination of a packet received at the first interface based at least in part on a port used to receive the packet;
direct the auto-connect module to establish the physical connection when the intended destination is the wide area network; and
bypass the auto-connect module when the intended destination is the customer premise access equipment.

[c4] 4. The customer premise access equipment as in Claim 3, wherein the port used to receive the packet is representative of a network protocol associated with the

packet.

[c5] 5. The customer premise access equipment as in Claim 3, wherein the packet filter is implemented as part of a Point-to-Point Protocol (PPP) layer of a network protocol stack.

[c6] 6. The customer premise access equipment as in Claim 1, wherein the customer premise access equipment is one of a group consisting of a DSL modem, a dial-up modem, an optical network termination, and a cable modem.

[c7] 7. The customer premise access equipment as in Claim 1, wherein the auto-connect module is implemented as part of a Point-to-Point Protocol (PPP) layer of a network stack.

[c8] 8. In a communications processor for processing data transmitted between a network device of a local area network and an access concentrator of a wide area network, a network protocol stack comprising:
at least one higher-level protocol layer;
at least one lower-level protocol layer; and
a Point-to-Point Protocol (PPP) layer operably connected to the at least one higher-level protocol layer and the at least one lower-level protocol layer and being adapted to:
receive a data packet from the network device via the higher-level protocol layer;
determine an intended destination of the packet based at least in part on a port used to receive the packet from the network device; and
automatically establish a physical connection with the access concentrator when the wide area network is the intended destination of the packet.

[c9] 9. The network protocol stack as in Claim 8, wherein the PPP layer is further adapted to bypass an automatic establishment of a physical connection to the access concentrator when the intended destination is a protocol layer of the network protocol stack .

[c10] 10. The network protocol stack as in Claim 8, wherein the PPP layer is further adapted to:

store the packet in a buffer until the physical connection is established; and provide the packet from the buffer to the lower-level protocol layer for transmission to the access concentrator when the physical connection is established.

[c11] 11. The network protocol stack as in Claim 8, wherein the PPP layer is adapted to determine the intended destination of the packet by retrieving a status value associated with the port from a filter table, the status value being representative of the intended destination of the packet.

[c12] 12. The network protocol stack as in Claim 11, wherein the filter table includes a plurality of entries, each entry corresponding to a status value of one of a plurality of available ports of the network protocol stack.

[c13] 13. The network protocol stack as in Claim 11, wherein the filter table includes a plurality of multiple-bit entries, each bit of each entry corresponding to a status value of one of a plurality of available ports of the network protocol stack.

[c14] 14. The network protocol stack as in Claim 8, wherein the network protocol stack is implemented in one of a group consisting of a DSL modem, a dial-up modem, an optical network termination, and a cable modem.

[c15] 15. A method for communicating data from a network device of a local area network to an access concentrator of a wide area network using a customer premise access equipment, the method comprising the steps of:
receiving, at a port of the customer premise access equipment, a data packet from the network device;
determining an intended destination of the data packet based at least in part on the port; and
automatically establishing a physical connection between the customer premise access equipment and the access concentrator for transmission of the packet when the intended destination is the wide area network.

[c16] 16. The method as in Claim 15, further comprising the step of:
bypass an automatic establishment of a physical connection between the

customer premise access equipment and the access concentrator when the intended destination is the customer premise access equipment.

[c17] 17. The method as in Claim 15, wherein the step of determining the intended destination includes retrieving a status value associated with the port from a filter table, the status value being representative of an intended destination of a data packet received via the port.

[c18] 18. The method as in Claim 17, wherein the filter table includes a plurality of status values, each status value representing an intended destination of a packet received at one of a plurality of available ports.

[c19] 19. The method as in Claim 18, wherein each of the plurality of status values is a binary value.

[c20] 20. The method as in Claim 15, further comprising the steps of:
storing the data packet until the physical connection is established; and
transmitting the data packet to the access concentrator over the established physical connection.

[c21] 21. The method as in Claim 15, wherein the customer premise access equipment is one of a group consisting of a DSL modem, a dial-up modem, an optical network termination, and a cable modem.

[c22] 22. In a network protocol stack of a customer premise access equipment for processing data transmitted between a network device of a local area network and an access concentrator of a wide area network, the network protocol stack including at least a Point-to-Point Protocol (PPP) layer, a method comprising the steps of:
receiving, at the PPP layer, a data packet from the network device via a port of a higher-level protocol layer of the network stack;
determining, at the PPP layer, an intended destination of the first data packet based at least in part on the port; and
automatically establishing a physical connection between the customer premise access equipment and the access concentrator when the intended destination of the data packet is the wide area network.

[c23] 23. The method as in Claim 22, further comprising the step of bypassing an automatic establishment of a physical connection between the customer premise access equipment and the access concentrator when the intended destination of the data packet is the customer premise access equipment.

[c24] 24. The method as in Claim 22, further comprising the step of transmitting the data packet over the established physical connection.

[c25] 25. The method as in Claim 24, further comprising the step of buffering the data packet in a buffer until the physical connection is established.

[c26] 26. The method as in Claim 22, wherein the step of determining the intended destination includes retrieving a status value associated with the port from a filter table, the status value being representative of an intended destination of a data packet received via the port.

[c27] 27. The method as in Claim 26, wherein the filter table includes a plurality of status values, each status value representing an intended destination of a packet received at one of a plurality of available ports.

[c28] 28. The method as in Claim 27, wherein each of the plurality of status values is a binary value.

[c29] 29. The method as in Claim 22, wherein the customer premise access equipment is one of a group consisting of a DSL modem, a dial-up modem, an optical network termination, and a cable modem.

[c30] 30. In a customer premise access equipment for processing data transmitted between a network device of a local area network and an access concentrator of a wide area network, a computer readable medium comprising a set of executable instructions adapted to manipulate a processor to:
receive a data packet from the network device via an available port of the customer premise access equipment;
determine an intended destination of the first data packet based at least in part on the port; and
automatically establish a physical connection between the customer premise

access equipment and the access concentrator when the intended destination of the data packet is the wide area network.

[c31] 31. The computer readable medium as in Claim 30, wherein the set of executable instructions further includes instructions to manipulate the processor to bypass an automatic establishment of a physical connection between the customer premise access equipment and the access concentrator when the intended destination of the data packet is the customer premise access equipment.

[c32] 32. The computer readable medium as in Claim 30, wherein the set of executable instructions further includes instructions to manipulate the processor to provide the data packet for transmission over the established physical connection.

[c33] 33. The computer readable medium as in Claim 32, wherein the set of executable instructions further includes instructions to manipulate the processor to buffer the data packet in a buffer until the physical connection is established.